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N. Whitener

PATENT
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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant : Shunpei Yamazaki et al. Art Unit:
Serial No.: 09/302,679 Examiner:
Filed : 04/30/99
Title : ELECTRONIC DEVICE AND METHOD FOR MANUFACTURING THE SAME

Assistant Commissioner for Patents
Washington, DC 20231

PRELIMINARY AMENDMENT

Sir:

Prior to initial examination, kindly amend the above-identified application as follows:

In the Claims

Please cancel claims 1-9 and substitute the following new claims:

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10. (New) An electronic device comprising:

a substrate;

Date of Deposit 6-1-99
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Janet Christy

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a semiconductor layer provided over said substrate and comprising a source region and a drain region and a channel forming region which is provided between said source region and said drain region; and

a gate electrode provided over said substrate and adjacent to said channel forming region with a gate insulating film between said channel forming region and said gate electrode,

wherein said gate electrode comprises aluminum or a material containing aluminum as a principal component thereof, and

wherein said gate electrode contains carbon atoms at a concentration of 5×10^{18} atoms$\cdot$cm^{-3} or less, and nitrogen atoms at a concentration of 7×10^{17} atoms$\cdot$cm^{-3} or less.

11. (New) A TV camera comprising:

a substrate;

a semiconductor layer provided over said substrate and comprising a source region and a drain region and a channel forming region which is provided between said source region and said drain region; and

a gate electrode provided over said substrate and adjacent to said channel forming region with a gate insulating film between said channel forming region and said gate electrode,

wherein said gate electrode comprises aluminum or a material containing aluminum as a principal component thereof, and

wherein said gate electrode contains carbon atoms at a concentration of 5×10^{18} atoms·cm^{-3} or less, and nitrogen atoms at a concentration of 7×10^{17} atoms·cm^{-3} or less; and

TV camera parts, coupled to said substrate.

12. (New) A personal computer comprising:

a substrate;

a semiconductor layer provided over said substrate and comprising a source region and a drain region and a channel forming region which is provided between said source region and said drain region; and

a gate electrode provided over said substrate and adjacent to said channel forming region with a gate insulating film between said channel forming region and said gate electrode,

wherein said gate electrode comprises aluminum or a material containing aluminum as a principal component thereof, and

wherein said gate electrode contains carbon atoms at a concentration of 5×10^{17} atoms·cm^{-3} or less, and nitrogen atoms at a concentration of 7×10^{18} atoms·cm^{-3} or less; and

personal computer parts, coupled to said substrate.

13. (New) A car navigation system comprising:

a substrate;

a semiconductor layer provided over said substrate and comprising a source region and a drain region and a channel forming region which is provided between said source region and said drain region; and

a gate electrode provided over said substrate and adjacent to said channel forming region with a gate insulating film between said channel forming region and said gate electrode,

wherein said gate electrode comprises aluminum or a material containing aluminum as a principal component thereof, and

wherein said gate electrode contains carbon atoms at a concentration of 5 x 10^{18} atoms·cm^{-3} or less, and nitrogen atoms at a concentration of 7 x 10^{17} atoms·cm^{-3} or less; and

car navigation parts, coupled to said substrate.

14. (New) A TV projection system comprising:

a substrate;

a semiconductor layer provided over said substrate and comprising a source region and a drain region and a channel forming region which is provided between said source region and said drain region; and

a gate electrode provided over said substrate and adjacent to said channel forming region with a gate insulating film between said channel forming region and said gate electrode,

wherein said gate electrode comprises aluminum or a material containing aluminum as a principal component thereof, and

wherein said gate electrode contains carbon atoms at a concentration of 5 x 10^{18} atoms·cm^{-3} or less, and nitrogen atoms at a concentration of 7 x 10^{17} atoms·cm^{-3} or less; and

TV projection system parts, coupled to said substrate.

15. (New) A video camera comprising:

a substrate;

a semiconductor layer provided over said substrate and comprising a source region and a drain region and a channel forming region which is provided between said source region and said drain region; and

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a gate electrode provided over said substrate and adjacent to said channel forming region with a gate insulating film between said channel forming region and said gate electrode,

wherein said gate electrode comprises aluminum or a material containing aluminum as a principal component thereof, and

wherein said gate electrode contains carbon atoms at a concentration of 5×10^{18} atoms$\cdot$cm^{-3} or less, and nitrogen atoms at a concentration of 7×10^{17} atoms$\cdot$cm^{-3} or less; and

video camera parts, coupled to said substrate.

16. (New) A device according to claim 10 wherein said substrate comprises glass and said electronic device further comprises an insulating layer provided between said substrate and said semiconductor layer.

17. (New) A TV camera according to claim 11 wherein said substrate comprises glass and said TV camera further comprises an insulating layer provided between said substrate and said semiconductor layer.

18. (New) A personal computer according to claim 12 wherein said substrate comprises glass and said personal computer further comprises an insulating layer provided between said substrate and said semiconductor layer.

19. (New) A car navigation system according to claim 13 wherein said substrate comprises glass and said car navigation system further comprises an insulating layer provided between said substrate and said semiconductor layer.

20. (New) A TV projection system according to claim 14 wherein said substrate comprises glass and said TV projection system further comprises an insulating layer provided between said substrate and said semiconductor layer.

21. (New) A video camera according to claim 15 wherein said substrate comprises glass and said video camera further comprises an insulating layer provided between said substrate and said semiconductor layer.

22. (New) A device according to claim 10 wherein a silicon nitride film is formed in contact with an upper plane of said gate electrode, and a contact to said gate electrode is formed via an aperture formed in said silicon nitride film.

23. (New) A TV camera according to claim 11 wherein a silicon nitride film is formed in contact with an upper plane of said gate electrode, and a contact to said gate electrode is formed via an aperture formed in said silicon nitride film.

24. (New) A personal computer according to claim 12 wherein a silicon nitride film is formed in contact with an upper plane of said gate electrode, and a contact to said gate electrode is formed via an aperture formed in said silicon nitride film.

25. (New) A car navigation system according to claim 13 wherein a silicon nitride film is formed in contact with an upper plane of said gate electrode, and a contact to said gate electrode is formed via an aperture formed in said silicon nitride film.

26. (New) A TV projection system according to claim 14 wherein a silicon nitride film is formed in contact with an upper plane of said gate electrode, and a contact to said gate electrode is formed via an aperture formed in said silicon nitride film.

27. (New) A video camera according to claim 15 wherein a silicon nitride film is formed in contact with an upper plane of said gate electrode, and a contact to said gate electrode is formed via an aperture formed in said silicon nitride film.

28. (New) A device according to claim 10 wherein a protrusion is formed on a surface of said gate electrode, and a maximum height of said protrusion is 500 Å or lower.

29. (New) A TV camera according to claim 11 wherein a protrusion is formed on a surface of said gate electrode, and a maximum height of said protrusion is 500 Å or lower.

30. (New) A personal computer according to claim 12 wherein a protrusion is formed on a surface of said gate electrode, and a maximum height of said protrusion is 500 Å or lower.

31. (New) A car navigation system according to claim 13 wherein a protrusion is formed on a surface of said gate electrode, and a maximum height of said protrusion is 500 Å or lower.

32. (New) A TV projection system according to claim 14 wherein a protrusion is formed on a surface of said gate electrode, and a maximum height of said protrusion is 500 Å or lower.

33. (New) A video camera according to claim 15 wherein a protrusion is formed on a surface of said gate electrode, and a maximum height of said protrusion is 500 Å or lower.

REMARKS

Please consider these claims as part of substantive examination of this case.

If there are any other charges, or any credits, please apply them to Deposit Account No. 06-1050.

Respectfully submitted,

Date: 6/1/99

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